

OBSERVATIONS OF THE 1964 EAST TEXAS  
SOUTHERN PINE BEETLE EPIDEMIC

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Texas Forest Service

INTRODUCTION

This report is supplementary to previous annual summaries prepared since the beginning of the Southern Pine Beetle Control Project in 1958. Highlights and observation of events that occurred during the calendar year of the control project on private lands only are recorded. Information on National Forests is excluded from this report.

Records have been useful in easily recalling the destructive potential of Southern pine beetles such as occurred in 1962, especially to the landowners, who through concerted control efforts, have not allowed the opportunity for the epidemic to again reach such proportion. This is exemplified by glimpses at a portion of the current epidemic history; these follow. In December 1961 a total of 113 infestations remained uncontrolled on approximately 600,000 acres; a few of the spots were several hundred acres in size. These spots, along with the effects of hurricane Carla, caused the epidemic area to soar upward to 4,500,000 acres during 1962. The total area of completely killed timber that year was 25,000 acres. In July 1962, the beetle population declined sharply; at the end of the year only 5 infestations remained uncontrolled. Landowners continued control operations and intensified efforts. Taking advantage of the population decline, landowners underwent the expense in 1963 of locating and controlling single-tree infestations containing overwintering broods. This was continued during the year resulting in a smaller size of individual infestations and the epidemic area being reduced to 2,000,000 acres. By December 1963, no known infestations remained uncontrolled. Pine timber on 610 acres was killed.

During the winter of 1963-1964 the Southern pine beetle population remained at a low level with little increase in infestation spread prior to early June 1964. Surveillance and evaluation of the situation had enabled landowners to remain alert. When infestations were located by aerial detection, control action was initiated promptly, the number of spots detected during the year was 937. By mid-November 1964 no known spots remained uncontrolled. Acreage of killed timber in 1964 was 335 acres in the epidemic area of approximately 2,900,000 acres.

The total reported expenditures for control operations during the calendar year January 1 to December 31, 1964 was \$46,568.86. This excludes expenditures from a few landowners who neither reported expenditures to the Texas Forest Service nor requested Federal reimbursement. A statement of expenditures by each landowner who reported this information to the Texas Forest Service is given in the Appendix.

CALENDAR OF 1964 EVENTS

January 7-17 - An operations recorder survey designed to evaluate Southern pine beetle population trends was conducted by the U.S.F.S. Forest Insect and Disease Control Branch, Zone 3. Aided by the Texas Forest Service an area of approximately 2,000,000 acres was surveyed. Results indicated that the beetle population was at a low level, possibly the lowest in several years. The number of infested trees per thousand acres was 0.3.

March 16-31 - A second operations recorder survey was made by the U.S.F.S. Forest Insect and Disease Control Branch, Zone 3 assisted by the Texas Forest Service. Results showed an expected increase in the Southern pine beetle population. The number

of brood trees per thousand acres increased from 0.3 in January to about 2.1 in March. Most activity was limited to single tree infestations, primarily lightning-struck trees.

May 12-13 - The Texas Forest Service located multiple tree spots on scheduled aerial detection flights and reported these to landowners for control action, Beetle activity was increasing.

June 12 - The Sub-Committee on Field Control agreed to resume the plan developed during 1963 whereby several large landowners would participate in bi-weekly aerial detection flights over the epidemic area. W. T. Carter and Brother, Champion Papers Inc., International Paper Company, Kirby Lumber Corporation, Southland Paper Mills, Inc., Wirt Davis Estate, East Texas Pulp and Paper Corporation and the Texas Forest Service (Districts 4, 5 and 6 ) were each assigned a sector of the epidemic area for complete aerial coverage for detection of Southern pine beetle infestations.

June 17 - A biological evaluation of Southern pine beetle in Southeast Texas was released. It had been prepared jointly by D. E. Ketcham and D. L. Williamson, Texas Forest Service, for the period July 1963 through June 1964. Incorporated in the report was information obtained through evaluation surveys, population sampling to determine their ratio of increase, field observations, and detection flights. This evaluation alerted landowners to the fact that although infestations had remained relatively small during 1963 and early 1964, the current spots were well distributed, brood survival was high, and additional trees would soon be attacked. Thus control efforts would have to be intensified if beetle populations were to be held at a low level.

June 22-July 14 - The third operations recorder survey was made by the U.S.F.S. Forest Insect and Disease Control Branch, Zone 3 aided by the Texas Forest Service. Results showed that Southern pine beetle populations had increased some since March; from 2.1 to 4.6. There is no doubt that control efforts on the part of landowners had an effect in preventing a larger population build-up by the insect.

July 15 - A revised plan entitled GENERAL CONTROL PLAN FOR SOUTHERN PINE BEETLE INFESTATIONS was prepared and distributed to landowners involved in the project. This plan superseded all previous procedures for control.

July 27 - A supplement to the general control plan entitled PRESCRIPTION FOR FELLING AND SPRAYING TREES INFESTED WITH SOUTHERN PINE BEETLES, became effective. This superseded all previous recommendations for cutting and spraying trees.

September 29-October 7 - A fourth and final evaluation survey for the year was conducted by the U.S.F.S. Forest Insect and Disease Control Branch, Zone 3 and the Texas Forest Service. Southern pine beetle activity declined to about 1 tree per thousand acres after increasing during the summer from a very low level in January. A comparison between population trends during 1963 and 1964 is given in the Appendix.

#### DETECTION

The aerial detection procedure remained the same, i. e., using Texas Forest Service grid block maps covered with plastic drafting film to record spot locations during detection surveys from high winged airplanes, primarily Cessna 172's and 182's.

During the summer, when infestations located over the 2,900,000 acre area became more numerous, landowners agreed to participate in the sector flight plan developed in 1963. Bi-weekly flights were made over the sectors by each assignee responsible for complete aerial coverage.

The Forest Pest Control Section head of the Texas Forest Service continued to serve as project coordinator, however, the procedure for coordinating the project was modified. In mid-April the Forest Pest Control Section moved to new headquarters at the Cudlipp Forestry Center in Lufkin. Certain responsibilities in coordinating the control project were delegated to Districts 3, 4, 5 and 6 of the Service. This included such items as conducting aerial detection flights, notifying landowners of infestations via flash reports, and keeping the project coordinator informed on the status of the control project in each district.

#### Record of Aerial Observations

Each year a tabulation from Texas Forest Service records has shown the number of spots detected by flight date over the entire epidemic area, except during 1962 when specific zones of infestation were flown. The tabulation below shows the number of spots picked up over the entire epidemic area each month and the number of times the area was covered by flights during the given month. No effort was made to show spots picked up by flight date due to the irregularity of sector coverage; in most months the epidemic area was completely covered twice by aerial observers.

#### SPOTS DISCOVERED FROM AERIAL OBSERVATION, 1964

Month	Number Times Covered	Spots Observed
May	1	21
June	2	437
July	2	268
August	2	107
September	2	62
October	2	32

Included in the figures are spots located outside the defined area of infestation. Texas Forest Service personnel in Districts 3 and 6 made occasional flights to keep watch for further activity adjacent to the epidemic area. To the north of the epidemic area, two active Southern pine beetle spots were located in July and controlled; one each in southern Angelina and Trinity Counties.

In late July, the U. S. F. S. Forest Insect and Disease Control Branch, Zone 3, conducted a detection survey over the Angelina National Forest and located active Southern pine beetle infestations in a localized area about five miles northeast of Broddus, San Augustine County. The eight spots found ranged in size from 20 to 50 trees. Control was promptly executed; no further activity occurred near that location during the remainder of the year.

A total of 18 active infestations were located and 447 brood trees controlled in Liberty County west of the Trinity River and eastern San Jacinto County resulting from detection flights made over this area by TFS District #6 personnel.

With the exception of spots located in Trinity and Angelina Counties, the epidemic area was almost the same as in 1963. A map of the Southern pine beetle control area is shown in the Appendix.

A tabulation of total number of spots detected on flights and the size of the epidemic area for each year of the Southern pine beetle control project has been presented in recent reports. It is presented again below with the addition of 1964 information for comparison.

Year	Total Spots Detected on Flights	Size of Epidemic Area
1957	Unknown	200
1958	106	60,000
1959	108	200,000
1960	436	200,000
1961	943	600,000
1962	2200	4,500,000
1963	2279	2,000,000
1964	937	2,900,000

Of the 937 spots located during the year, 534 or 57 percent contained active Southern pine beetle brood and were controlled. The remaining damage observed consisted primarily of spots which later in the year had become inactive and attacks by other bark beetles such as Ips and black turpentine beetles.

#### CONTROL

Due to the behavior of the Southern pine beetle population resulting from the influence of winter temperatures and a low population level, control action was not begun as early in the year compared to 1963 when control action was underway in February. According to U. S. Weather Bureau records the mean monthly temperature in the epidemic area was considerably below the 30-year average for the period December 1963 through March 1964. Only 1 to 1½ generations of Southern pine beetle had completed development during the period from late September 1963 through April 1964 because of the low temperatures. Although development was slowed, no beetle mortality was found resulting from the low temperatures. From January to March 1964, the number of infested trees per thousand acres had risen from a low of 0.3 trees to about 2.

Most landowners were prepared to move into action and when multiple-tree infestations were located in May, control operations promptly followed. Control was again aided by the fact that the areas of infestation were accessible. The damage and hazard of continued mortality was reduced by efforts by landowners who controlled reported spots before each infestation could spread. This was an improvement over previous years. A few spots enlarged to reach several hundred trees by late summer because the owners were slow to respond to request for control. These illustrated what might have resulted if the landowners had not acted promptly in a majority of cases.

Evaluation surveys and a biological evaluation, which included current information on the status of the Southern pine beetle and control recommendations, were again used to keep landowners informed. The U. S. F. S. Forest Insect and Disease Control Branch, Zone 3, located in Pineville, Louisiana continued to provide assistance in performing the work. The Sub-Committee on Field Control of the parent Texas Forest Pest Committee greatly facilitated the coordination of the Southern Pine Beetle Control Project and acted as an advisory committee to the project coordinator.

Chemical control recommendations were 2 gallons of 11 percent gamma isomer BHC in 50 gallons of diesel fuel.

PROJECT PERSONNEL

The number of people employed on the project in 1964 was 158; a decrease of 27 from the previous year. Project personnel included aerial observers, supervisory and clerical personnel, ground checkers, and control crews. The size of control crews ranged from two to five men; the most common crew size was three men.

VOLUME OF TIMBER KILLED

The volume of timber killed during 1964 was also reduced. The tabulation below contains data from a previous report plus the information 1964. Losses are compiled from landowners' reports and Texas Forest Service records to show the volume of timber killed each year since the control project was initiated and total loss for the seven year period.

TIMBER KILLED (VOLUME)

Year	Sawlogs (M Bd. Ft.)	Pulpwood (Cords)
1958	500	0
1959	2,500	2,500
1960	8,000	8,000
1961	17,887	24,000
1962	93,043	111,110
1963	4,084	1,920
1964	2,501	1,420
Total	128,515	148,950

An estimate of the amount of killed sawtimber and pulpwood salvaged during 1964 was compiled from reports received from cooperators and Texas Forest Service records. The amount of sawtimber salvaged was 56 percent of the total killed; pulpwood salvaged was 26 percent. Since 1958 all pine timber on an estimated 45,405 acres has been killed by Southern pine beetles in East Texas. An estimated 335 acres was killed in 1964.

SUMMARY

Damage by the Southern pine beetle was further reduced in 1964. The first reduction in the size of the epidemic since 1958, expressed in number of new infestations and total area infested and volume killed, occurred in 1963. Although the periphery of the area of infestation increased in 1964, timber volume and acreage losses were held to near one half the damage during 1963. The commendable job done by cooperators in controlling active infestations was vital in reducing the hazard of population build-up by the insect.

All known infestations were controlled by mid-November. Evaluation surveys and observations were continued. These efforts will be continued and landowners have been encouraged to remain alert for further signs of infestation. Evidence already obtained indicates further activity will occur during 1965, possibly at an increased rate and earlier in the year than 1964. Control action should be undertaken immediately when active infestations are found.

References

- Barry, P. J. and Ketcham, D. E. 1964. Biological Evaluation of Southern Pine Infestations on the Angelina National Forest, Texas. Report No. 64-3-18. USDA, Forest Service, R-8.
- Galusha, H. H. and D. E. Ketcham. 1964. Aerial Survey of Southern Pine Beetle Infestations in Southeast Texas. Report No. 64-3-5. USDA, Forest Service, R-8.
- \_\_\_\_\_ 1964. Aerial Survey of Southern Pine Beetle Infestations in Southeast Texas. Report No. 64-3-14. USDA, Forest Service, R-8.
- \_\_\_\_\_ 1964. Aerial Survey of Southern Pine Beetle Infestations in Southeast Texas. Report No. 64-3-30. USDA, Forest Service, R-8.
- Ketcham, D. E. and Williamson, D. L. 1964. Biological Evaluation of Southern Pine Beetle in Southeastern Texas. Report No. 64-3-11. USDA, Forest Service, R-8.
- Overgaard, N. A., Galusha, H. H., and Ketcham, D. E. 1964. Aerial Survey of Southern Pine Beetle Infestations in Southeast Texas. Report No. 64-3-7. USDA, Forest Service, R-8.
- Williamson, D. L. 1964. Observations of the 1963 East Texas Southern Pine Beetle Epidemic. Unpublished report, Texas Forest Service, Forest Pest Control Section, Lufkin.

## APPENDIX

Statement of Southern Pine Beetle Control Project Expenditures for the period January 1, 1964 through December 31, 1964.

Area of Infestation, 1964.

General Control Plan For Southern Pine Beetle Infestations, effective July 15.

Prescription for Felling and Spraying Trees Infested with Southern Pine Beetles. effective July 27.

Southern Pine Beetle Population Trends, Southeast Texas, January 1963 -September 1964.

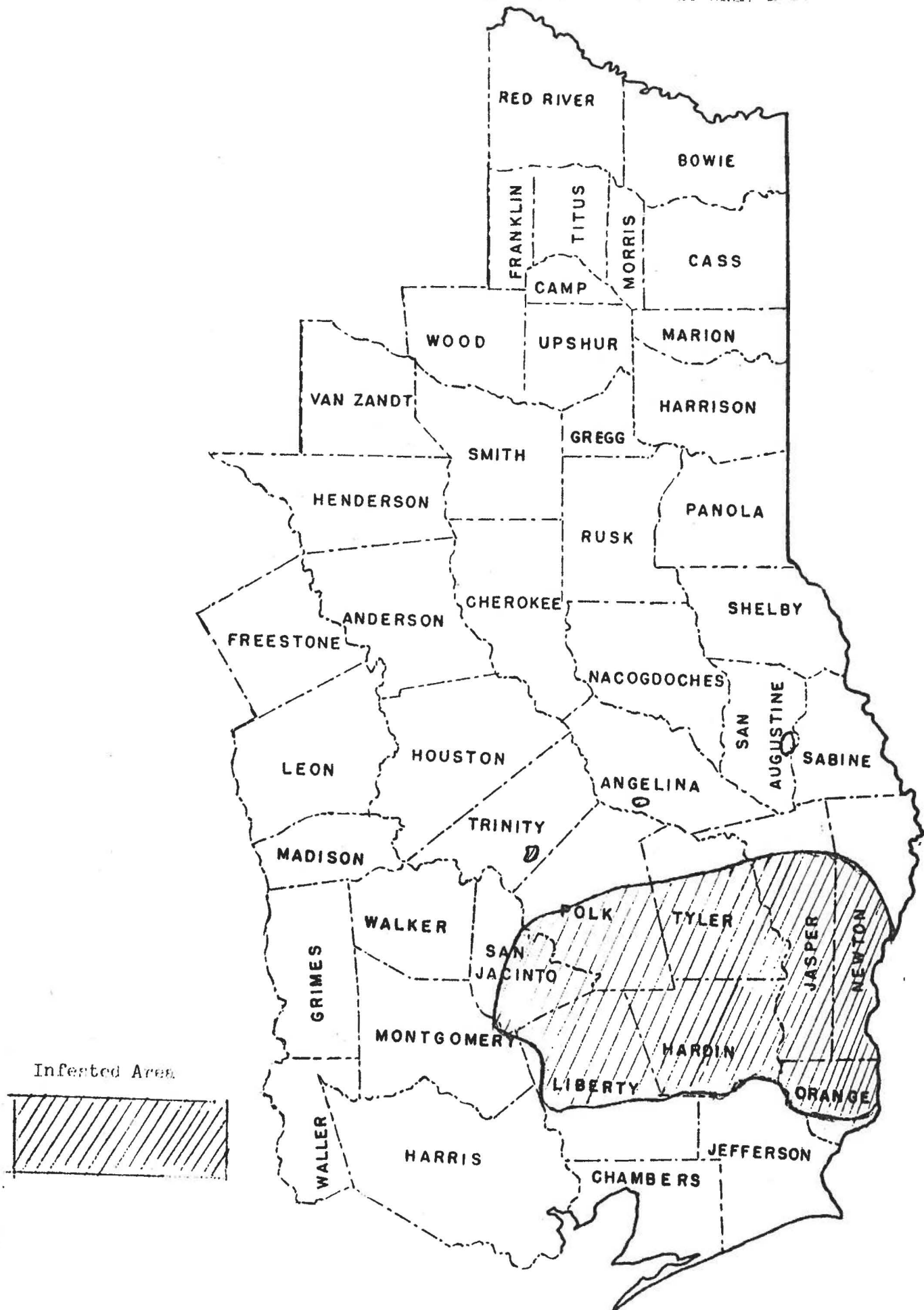


SOUTHERN PINE BEETLE CONTROL EXPENDITURES  
January 1, 1964 - December 31, 1964

<u>NAME</u>	<u>AMOUNT</u>
Angelina County Lumber Co.	\$ 5,366.84
W. T. Carter & Brother	2,501.04
L. Cartwright Production Co.	126.36
Champion Papers Inc.	1,636.99
Wirt Davis Estate	529.77
Dennie D. Glenn	250.10
International Paper Co.	4,828.38
Kirby Lumber Corporation	7,044.29
The Lutcher & Moore Lumber Co.	288.00
T. J. Moss Tie Co.	2,960.98
P. A. Racki Lumber Co., Inc.	465.73
Harvey B. Sims	31.70
Southland Paper Mills, Inc.	1,786.36
Southwestern Settlement & Dev. Co. Division of East Texas Pulp & Paper Co.	4,848.32
H. J. L. Starks	586.00
Temple Industries, Inc.	1,447.73
Texas Forest Service	11,870.27
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	\$ 46,568.86



SOUTHERN PINE BEETLE EPIDEMIC AREA 1934



## Texas Forest Service

GENERAL CONTROL PLAN  
FOR  
SOUTHERN PINE BEETLE INFESTATIONS  
JULY 15, 1964

(Note: This Plan Supersedes All Previous Procedures For Control)

1. The objective of the plan is to control immediately all active brood trees throughout the epidemic area. The procedure is outlined below:

a. Landowners should control infestations on their lands. If there is reluctance, persuasion should be tried.

b. Aerial detection flights will be continued by the Texas Forest Service and cooperating landowners at regular intervals until the epidemic abates.

c. Landowners should continue full scale control operations until all known Southern pine beetle infestations are controlled.

d. The primary emphasis is on control, not utilization of salvage. Unless each owner recognizes this principle and applies it, the control efforts of other landowners may be futile.

e. Each spot that has been controlled will be examined later for reinfestations and immediately controlled, if active brood trees are found.

f. Evaluations to determine population trends and status of epidemic will be conducted by the Texas Forest Service and the Insect and Disease Control Branch, U. S. Forest Service at regular intervals. Presence of infestations will be determined by supervisory personnel trained in this technique.

g. When a landowner is unwilling or unable to conduct control operations, a Texas Forest Service crew will endeavor to get that landowner's permission to conduct the work. If granted, a Texas Forest Service crew will do the control work gratis on forest ownerships of less than 50 acres. For ownerships over 50 acres of forest land, the landowner must agree to reimburse the Texas Forest Service for control before the work will be done. Any exceptions will require the Director's approval.

h. No work will be done within corporate limits, but effort will be made to persuade municipalities to do the control work. When all efforts to accomplish control work within corporate limits of a municipality have failed to accomplish the desired results, an appeal may be made to the Director, Texas Forest Service for authorization for Texas Forest Service crews to do the work.

2. The following is available from the Texas Forest Service through the Forest Pest Control Section located in Lufkin, Texas:

a. On-the-ground training of crews in insect identification, control techniques and mop up operations.

b. Information on sources of supplies and materials.

3. Inspections of control work to determine its effectiveness will be done by employees of the Texas Forest Service.

## 4. Reimbursement for Control Expenditures:

a. All owners will be reimbursed from Federal funds, through PL 110, in the amount of one-third of expenditures for control work which conforms to the description for felling and spraying trees infested with Southern pine beetles, issued July 27, 1964. Assurance from the Region 8 office of the Forest Service has been received that funds will soon be placed at our disposal, but Congress has moved slowly on some appropriations.

b. Only expenditures directly related to felling and spraying will be reported on the monthly report Form FM-17, "Report of Southern Pine Beetle Control Expenditures" available from the Texas Forest Service. A copy of the revised Form FM-17 is attached. Additional copies may be obtained from the Pest Control Section, Texas Forest Service, Box 310, Lufkin.

c. Expenditures for the removal of brood trees for utilization should be excluded in reports on Form FM-17 sent to the Texas Forest Service for reimbursement.

d. The report should be received by the Texas Forest Service by the 15th of the month subsequent to the month in which the control expenditures were made.

DLW/DY/ADF/et  
Attachment  
July 22, 1964

SUPPLEMENT TO GENERAL CONTROL PLAN  
PRESCRIPTION FOR FELLING AND SPRAYING TREES INFESTED WITH SOUTHERN PINE BEETLES  
Effective July 27, 1964

(Note: This Supersedes All Previous Recommendations For Cutting and Spraying Trees)

1. Suggested Crew Organization - A four man crew is best, with one man operating the power saw, two spraying and the fourth turning logs to be sprayed, and assisting the power saw operator. One man should be in charge and mark infested trees. Supervision of control crews by well-informed personnel is essential to proper control.

2. Required Chemical - The best chemical is a mixture of No. 2 fuel oil and 11% Benzene Hexachloride (BHC). The correct mixture is two (2) gallons of BHC 11% concentrate to fifty (50) gallons of oil. Approximately  $1\frac{1}{2}$  gallons of mixed solution are required to spray an average size tree. If use of other chemical solutions are planned, written approval should be obtained from the Texas Forest Service before application.

3. Suggested Minimum Equipment Needed - One power saw or other type of felling saw, one axe, one cant hook, two garden type pressure sprayers. At least one extra sprayer is desirable; spare parts for the sprayers are also necessary. For extensive spraying, stainless steel or brass pressure tanks with neoprene hose, brass wand and brass nozzle are recommended.

4. Steps To Be Followed In Treating The Infested Trees

a. Fell trees and cut into lengths that can be turned easily so all sides of the log can be sprayed.

b. Spray all infested portions of the tree including the stump. The BHC solution should be applied until the bark is soaked and there is some run-off. After the top surface of the trunk is sprayed, the log should be turned and the other areas sprayed. IT IS ESPECIALLY IMPORTANT THAT ALL SURFACES BE SPRAYED.

c. Spray each tree before felling another tree across it.

d. Keep spray nozzle about one foot from the bark surface.

e. Spray all felled trees before leaving the job for the day. Unsprayed trees might be forgotten and allow beetles to escape and attack other trees.

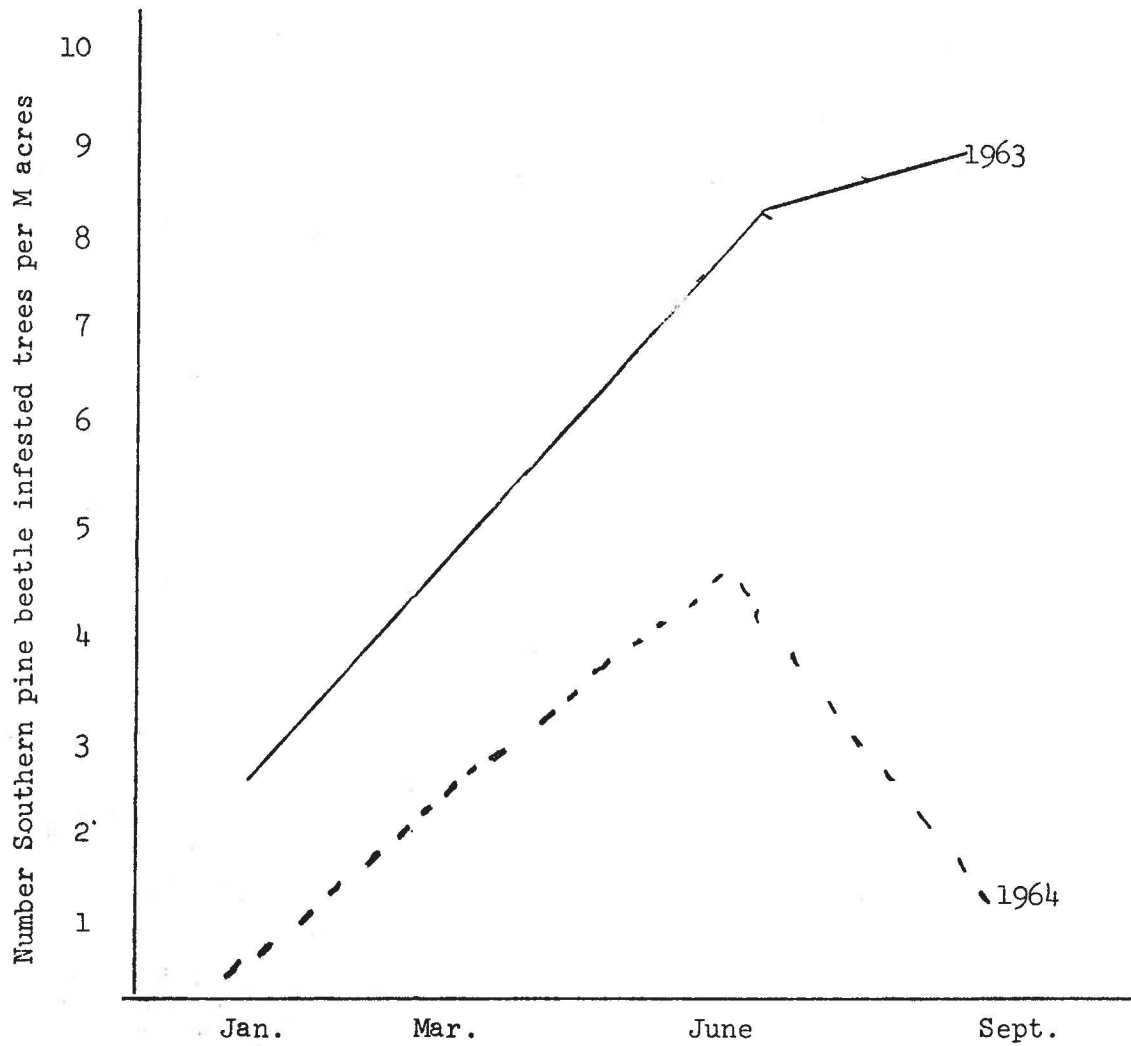
f. If the infested logs are to be salvaged and utilized within 48 hours no spraying is necessary. Spray all remaining infested material such as stumps and tops.

g. If the material is to be salvaged but not utilized within 48 hours, this and other infested material should be sprayed.

h. After control has been completed, a strip about 100 yards wide round the infestation should be scouted for additional infested trees. Control should be applied when infested trees are found.

CAUTION - BHC IS POISONOUS TO HUMANS. Keep it off your skin and away from your eyes and nose. Wash carefully with soap and warm water after mixing or applying spray. Follow the directions and precautions on the label of the chemical.

Southern pine beetle population trends, southeast Texas,  
January 1963 - September 1964.



Cooperators in Southern Pine Beetle Control Project  
sent copy of Observations of the 1964 East Texas  
Southern Pine Beetle Epidemic report, by Kenneth Nelson

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Powell Lumber Company  
P. O. Drawer P  
Lake Charles, La.